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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,357	10/10/2003	Ian M. Bennett	PHO 99001C	3197

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EXAMINER	
LERNER, MARTIN	
ART UNIT	**PAPER NUMBER**
2626	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	**Application No.** 10/684,357	**Applicant(s)** BENNETT ET AL.	
	Examiner Martin Lerner	**Art Unit** 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 15 March 2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 11 to 15, 27 to 34, 46, and 53 to 70 is/are pending in the application.

4a) Of the above claim(s) 27 to 34 and 58 to 70 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 11 to 15, 46, and 53 to 57 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicants' election without traverse of Group I, Claims 11 to 15, 46, and 53 to 57, in the reply filed on 15 March 2007 is acknowledged.

2. Claims 27 to 34 and 58 to 70 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 15 March 2007.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 11 to 15 and 46 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Independent claim 11 is directed to a machine executable program, which is not a recognized statutory category of invention. A program must be claimed as being recorded on a recording medium for it to be a product, which is a statutory category of invention. Alternatively, independent claim 11 could be drafted as a system or an apparatus. However, a machine executable program is not proper as patentable subject matter, *per se*.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 14 and 56 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Claims 14 and 56 contain the limitation of computing compressed MFCC coefficients at either the client system or the server computing system "on a connection by connection basis", which limitation is not supported by a written description in the originally-filed Specification. Applicants' Specification discloses optimizing computation of MFCC coefficients on a case-by-case basis ¶[0173], and a system-by-system basis ¶[0174], but not on a connection-by-connection basis.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 46 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 46, a claim directed to a system, improperly depends upon claim 11, which is a claim directed to a program. Apparently, claim 46 should depend upon non-elected independent claim 29.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claims. See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 11, 12, 15, 53, 54, and 57 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 to 57 of U.S. Patent No. 6,633,846. Although the conflicting claims are not identical, they are not patentably distinct from each other because the corresponding claims both set forth a distributed client/server speech recognition system, where a first audio signal receiving routine recognizes words or sentences, and generates representative speech data

values as mel-frequency cepstral coefficients, a formatting routine for rendering the representative speech values into a transmission format, wherein the representative speech values are transmitted continuously within streaming packets without waiting for silence to be detected, and wherein the speech data values represent the least or minimum amount of information to generate word recognition.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 11 to 13, 15, 46, 53 to 55, and 57 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by *Bennett ('977)*.

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

(Note: The inventive entities are not identical, insofar as *Bennett ('977)* has an inventive entity consisting only Ian M. Bennett, but the current application has three additional inventors.)

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 11 to 13, 46, and 53 to 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Barclay et al.* in view of *Hoory et al.*

Concerning independent claims 11 and 53, *Barclay et al.* discloses a client/server speech recognizer, comprising:

"a first audio signal receiving routine for receiving user speech utterance signals representing speech utterances to be recognized during a sequence of speech utterance evaluation time frames, said speech utterances including sentences comprised of one or more words" – client system 2 has microphone 10 that accepts audio input, converts a sound into a digital representation by analog to digital conversion (ADC), and extracts a set of features that provide the best recognition (column 4, line 56 to column 5, line10: Figure 1); speech is recognized as words and sentences for an utterance, "Show me the weather for Boston" (column 3, lines 6 to 24), or "I want to fly from Boston to Denver tomorrow" (column 9, lines 16 to 25); continuous speech is divided into discrete transformed segments that facilitate mathematical operations (column 2, lines 14 to 16); implicitly, these discrete segments are called 'frames' ("a sequence of speech utterance evaluation time frames");

"a first signal processing routine adapted to generate representative speech data vales for each speech utterance evaluation time frame during which speech utterance signals are received, [said representative speech data values including a set of compressed mel-frequency cepstral coefficients (MFCC)]" – client system 2 has front-end 12 that extracts a set of features ("representative speech data values"), called cepstra, that provide the best recognition, and the features are quantized (column 5, lines 2 to 11: Figure 1);

"a formatting routine for rendering said representative speech data values into a transmission format suitable for transmission from the client system over a communications channel to a second processing routine executing on the server computing system" – dispatcher program of the client 70 sends quantized speech features via a communications link to server computer system 80 (column 5, line 48 to column 6, line 6: Figure 4); a dispatcher implements transmission by TCP/IP protocol (column 6, lines 50 to 53);

"wherein said representative speech data values are transmitted continuously during said speech utterances within streaming packets and without waiting for silence to be detected and/or said speech utterances to be completed" – the dispatcher does not wait for completion of logical blocks and the dispatcher itself is designed to quickly service the Internet with minimum overhead time (column 6, lines 56 to 59); front end streams the quantized data to the dispatcher, where 'stream' is defines as to send substantially continuously the data in real-time (column 7, lines 13 to 19); features are sent as packets (column 7, lines 48 to 59), implicitly, in TCP/IP protocol; a most likely transcription or text is determined unit an end-of-speech (EOS) is received (column 6, lines 5 to 8); thus, a dispatcher does not wait until an end-of-speech, *i.e.* silence, is detected to initiate transmission of quantized feature data;

"further wherein said representative speech data values constitute a minimum amount of information that can be used by said second processing routine to complete accurate recognition of said one or more words and said sentences" – extracted set of features, called cepstra, are those features that provide the best recognition as known in the art (column 5, lines 2 to 8); implicitly, cepstra are "a minimum amount of information that can be used" for speech recognition because they are a compressed form of the most relevant features for speech recognition.

Concerning independent claims 11 and 53, *Barclay et al.* discloses cepstra as representative speech data values, but does not expressly disclose "said representative speech data values including a set of compressed mel-frequency cepstral coefficients (MFCC)". However, mel-frequency cepstral coefficients (MFCC) are a well known form for cepstra in speech recognition. Specifically, *Hoory et al.* teaches a method and system for low bit rate speech coding with speech recognition features, where a commonly used set of feature vectors are mel-frequency cepstral coefficients (MFCC). Transmitting a compressed version of the set of feature vectors removes overhead required for decoding the speech. (Column 2, Lines 59 to 64; Column 3, Line 43 to

Column 4, Line 59: Figures 1 to 3) Thus, the objective is to obtain a low bit rate coding of speech for transmission and recognition at a remote speech recognizer with low overhead. It would have been obvious to one having ordinary skill in the art to provide representative speech data values as a set of compressed mel-frequency cepstral coefficients (MFCC) as taught by *Hoory et al.* for cepstra features of a client/server speech recognizer of *Barclay et al.* for a purpose of obtaining low bit rate coding and low overhead decoding of transmitted speech features.

Concerning claim 12, *Barclay et al.* discloses incorporating a dispatcher into a browser of a client side application for speech recognition at a server (column 8, lines 36 to 64: Figure 4).

Concerning claims 13 and 55, *Hoory et al.* teaches mel-cepstral feature vectors for each single speech frame of 10 msec (column 3, line 43 to column 4, line 38: Figures 1 and 2); a 10 msec frame implies each frame is 10×10^{-3} seconds long, *i.e.* 10^{-2} seconds, so 100 frames are produced every second; mel-cepstral frequency coefficients are based on binned spectra, or frequency components, from a frequency domain signal and a set of triangular frequency windows ("a separate cepstral coefficient value for a corresponding frequency component of said user speech utterance signals") (column 3, lines 43 to 51; column 4, lines 45 to 57); implicitly, these frequency components are sampled at a sufficiently high rate so as to be "spanning an audible speech frequency range".

Concerning claim 46, *Barclay et al.* discloses a speech query, "Show me the weather for Boston" (column 3, lines 6 to 24).

Concerning claim 54, *Barclay et al.* discloses real-time speech recognition processing and response (Abstract).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Liu et al., Cope et al., Kushner et al., Maes ('756), and Ramabadran disclose mel-frequency cepstral coefficients (MFCC).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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ML
3/28/07

Martin Lerner

Martin Lerner
Examiner
Group Art Unit 2626